



ENVIRONMENT AGENCY



BUILDING a cleaner future



BUILDING a cleaner future



**Pollution
incidents by
industrial sector**

CIRIA – the learning network for continuous improvement

For almost 40 years CIRIA – the Construction Industry Research and Information Association – has managed collaborative research and produced information aimed at providing best practice solutions to industry problems. CIRIA stimulates the exchange of experience across the industry and its clients, and has an established reputation for practical high quality information. Through networking and the dissemination of publications and newsletters, CIRIA seeks to improve the performance of all concerned with construction and the environment.

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Further details are available on CIRIA's Web site:

www.ciria.org.uk/ciria/

The BOC Foundation

The BOC Foundation for the Environment is an independent organisation established by The BOC Group plc in 1990. The Foundation awards grants for projects proposing practical solutions to a range of environmental problems being experienced in the UK. Emphasis is placed on pollution prevention wherever possible.

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**T H E B O C
F O U N D A T I O N**



3 Deliveries

Special care should be taken during deliveries, particularly when fuels and hazardous materials are being handled. Deliveries should be supervised at all times.

Establishing safe procedures and making someone responsible for supervising deliveries can help avoid spillages – preventing damage to the environment and saving valuable raw materials.

- Put contingency plans in place and make sure that all staff and workers are aware of what to do in the event of a spillage or other accident. Remember that even a spillage, if properly dealt with, need not result in pollution.
- Prior to delivery double check storage tank contents levels to prevent overfilling and ensure the right product is being delivered to the right tank.
- Ensure that the store is locked and secured after completion of the delivery.

safe procedures



- Silt injures fish by its abrasive action.
- Silt can clog the gills of fish, causing them to die by suffocation.
- Silt destroys spawning sites and insect habitats on the river bed, removing the source of food for fish.
- Silt coats the leaves of aquatic plants, limiting their growth.
- Silt can build up, causing blockages which could lead to flooding.

Water containing silt should never be pumped directly to a river, stream or surface water drain. When pumping water out of any excavation bear in mind that it may be silty. Pump the water to a foul sewer, to a settlement lagoon or tank or onto a grassy area to soak away.



Rainfall running off disturbed ground can also carry a large amount of silt. Areas of bare soil should be kept to a minimum and measures taken to control the run-off and prevent silty discharges.

Remember, all discharges off the site will require approval. Discharges to rivers, streams or soakaways, even if the discharge is via a surface water drain, must have the approval of the Environment Agency. For discharges to the foul sewer the agreement of the local Water Company is needed. Such approvals must be sought by Site Managers before any discharge is made.

9 Refuelling and plant maintenance

The potential for spillage is greatly increased during refuelling and maintenance of machinery.

- Refuel all vehicles in a designated safe area, preferably on an impermeable surface, away from rivers and drains. In this way, spillages can be contained.
- Never leave a vehicle unattended during refuelling or jam open a delivery valve.
- Changing oil and filters, draining down anti-freeze, cleaning plant, etc. should all take place in a designated safe area.
- Regular checks should be made for potential problems like worn hoses or leaky valves.



spillage

Remember that modern machines can easily cut through oil and chemical pipelines, water mains and sewers. Site Managers should have a good knowledge of their location from the local authority and previous owners. However, in some cases accurate records may not exist and old sewers may be unmarked, so caution is always advisable when excavating or piling. Where utilities are known to exist, use a CAT location tool to survey the area before carrying out exploratory excavation to identify their precise location.



control

5 Waste storage and disposal

The safe storage and disposal of waste is an essential pollution prevention measure which should be part of all site management systems.

Under the Environmental Protection Act, everyone producing waste has to know where it is going and that it is being disposed of properly.

- All wastes must be stored in designated areas which are isolated from surface drains. Skips should be regularly inspected and replaced when full.
- Waste storage areas should be bunded to contain spillages and skips should be covered to prevent litter being blown out.
- Paint cans, drums, old timber, cement bags, plastic sheeting, etc. are common causes of pollution. These should all be placed in a skip in a designated safe area as soon as they are finished with.
- Some of these materials can be recycled if properly segregated, so ensure waste goes into the correct skip.
- Used chemical containers may need special handling. Always follow the manufacturers instructions.



waste

- Waste oil and filters should not go into general waste skips. For oil, either use an oil bank on site or ring the Oil Bank line 0800 663366 to find the nearest disposal facility. Oil filters should be collected in a separate bin for recycling.
- Sewage disposal from toilets, office blocks and canteens can be a pollution problem. Site Managers should make the necessary arrangements, with the Water Company if it can be discharged to the foul sewer, with the Environment Agency if a septic tank or treatment plant has to be used, or with a contractor if a cess-pool is installed.

6 Pollution facts

- Most pollution incidents are a result of ignorance, apathy or neglect of basic procedures.
- The Construction industry is responsible for more pollution incidents than any other industry – nearly twice as many as the Chemical industry!
- An increasing number of pollution incidents are caused each year by vandalism and theft. It is important to keep one step ahead of potential intruders.
- Oil is a particularly harmful pollutant. One gallon of oil can cover an area of water the size of two football pitches.
- Litter is a pollutant too, and must not be allowed to enter a watercourse.

7 Groundwater protection

Groundwater is present to a greater or lesser extent beneath all sites. Once contaminated it is very difficult, sometimes impossible – and always expensive – to clean up. Pollution prevention is therefore essential.



Groundwater may provide a pathway for pollutants to reach streams or rivers, or it may have a direct use – for example, as drinking water taken from a well or borehole. Care must be taken to prevent the spillage of oil or chemicals onto the ground.

Leakage from storage tanks or other vessels is also a potential source of pollution and even small leaks over

long periods can give rise to an accumulation of pollution within the groundwater which, because it is out of sight, is often unnoticed until significant problems have occurred.

- Groundwater provides nearly 30% of all public water supplies.

Further information is available in the Environment Agency's Groundwater Protection Policy document and Groundwater Vulnerability maps.

8 Silt

Six per cent of all pollution is caused by silt – a major threat to the environment often produced on construction sites. Care should be exercised when removing excess water from a site. Any works creating silt are potentially polluting and can cause lasting damage to river life.

4 Storage

Storage of oil, chemicals and other materials on construction sites represents a major threat to the water environment.

Carry out all processes involving these in a designated safe area. Remember the COSHH procedures – be particularly aware of the threats posed by diesel and other oils, cement, lime, detergents and paint.

- Remember that storage tanks are always at risk so they should have a protective bund around them.
- The wall and floor of the bund must be impermeable to the material stored in it and should include no valves or drains.
- Regularly remove any rainwater that may have collected within the bunded area – checking first that the water is not contaminated.
- Many pollution incidents are caused by vandals. Fit lockable valves on all storage tanks. Secure fences, lock gates and doors and store materials under cover whenever possible. Store bowsers within site security compounds and never place or use them near to surface water drains.



2 Site preparation

Most pollution prevention measures are common sense, but some hazards exist even before construction begins. It is therefore essential that adequate preparations are made when a site is being cleared or demolition undertaken.

These should include:

- Site Management contacting the Environment Agency to arrange a meeting with the local Pollution Control Officer who will be pleased to offer advice both before work starts and during the operations.
- All staff and workers, including contractors, should be made aware of management, control or safety plans which relate to the site.
- Careful examination of any old buildings by supervisors before demolition to ensure that old storage tanks and associated pipework are empty. If not, qualified contractors and special equipment may need to be called in to clear them.



pollution

10 Concrete

Concrete is highly alkaline and corrosive, and can have a devastating impact on watercourses. It is essential to take particular care with all works involving concrete to contain both the concrete and any wash waters. Be extra vigilant if working anywhere near a river, stream or surface water drain.

- Do everything you can with concrete in a safe area: coating shuttering with oil, washing out mixers, wheel washing, storage and even mixing and pouring if possible.
- Remember that if shuttering fails, concrete can escape.



concrete



11 Training

Training plays a crucial role in protecting the environment. A well trained workforce can help prevent a pollution incident – saving vital time and money.

- Make sure that everyone on site is aware of the Environment Agency's role in pollution prevention. Display the Environment Agency emergency hotline prominently so that time is not wasted before expert help is on the scene of a spillage, accident or other pollution incident.
- Where possible, people should be given personal responsibility for regular checking of pollution prevention devices and procedures.
- Ensure that everyone is aware of the importance of protecting the environment and the efforts your company makes on site to prevent pollution.
- Include environmental management strategies in staff training.
- Display the poster available with this pack in a position where everyone will see it.
- Organise screenings of the Environment Agency's Building A Cleaner Future video for everyone working on the site, including sub contractors.
- Reinforce training with regular 'refresher' programmes and ensure that environmental training is included with all induction courses.



- A comprehensive drainage plan of your site, which accurately identifies all drains and nearby watercourses, should be available.
- Key staff should be familiar with the plan and have easy access to it.
- Drains should be clearly marked and colour coded. Surface water gullies and manhole covers should be coloured blue and foul sewer manholes red.
- All site staff should be made aware of the colour coding.

pollution



1 Site drainage

A good knowledge of the drainage systems on and around your site is fundamental to preventing water pollution.

If your site is in a developed area the foreman should know which are the surface drains and which are foul sewers – and where the local streams are.

Surface Water

The surface, or clean, water drain is designed to carry only uncontaminated rainwater, as it will lead directly to a local river, stream or soak-away.

Bear in mind that a site does not have to be next to a watercourse to cause problems. Water entering a surface water drain will eventually be discharged into a stream or river or via a soakaway into the ground where it may contaminate the ground water. Nothing which could cause pollution, including muddy water, should enter the surface water drain.

Foul Water

It may be possible to pump dirty water to the foul sewer, but only if your site management has agreed this with the local Water Company. Pre-treatment, such as settlement in a lagoon, may be necessary.

water

12 Free help and advice

Occasional accidents are inevitable, so have contingency plans to deal with emergencies.

Risks are minimised by following the advice in this booklet. If the worst should happen, do what you can immediately to contain the spillage, as long as it is safe, but never wash spillages away.



- Block the surface water drains immediately and use sand or similar material to absorb oil and chemical spills.
- If necessary, call in the emergency services.
- Contact the Environment Agency.

To report any environmental incident, anywhere in England or Wales, call the Environment Agency 24-hour Emergency Hotline:

**ENVIRONMENT AGENCY
EMERGENCY HOTLINE**
0800 80 70 60



accidents

13 Further Information

The Environment Agency publishes a series of Pollution Prevention Guidelines with detailed information on how to prevent pollution. These are available, free of charge, from your local Environment Agency office.

PPG2

Above Ground Oil Storage Tanks

PPG5

Working in or near Rivers

PPG6

Working at Demolition and
Construction Sites

PPG8

Safe Storage and Disposal of Used Oil

PPG13

High Pressure Water & Steam
Cleaners

Silt and its Effects on the River

Oil Care Code

CIRIA also publishes a number of relevant documents, including:
Environmental handbook for building and civil engineering projects:
Construction Phase,
ISBN 0 86017 378X.

The construction industry poses a major pollution threat to our natural water environment and is responsible for more pollution incidents than any other industry.

Spillages occur at sites both large and small throughout the country every day – sometimes devastating wildlife habitats, killing fish and destroying the invertebrate life on which fish and many other animals feed.

People are simply no longer prepared to accept pollution, particularly where it could have been avoided.

The level of today's fines reflects this change in attitudes. Magistrates Courts can now impose fines of up to £20,000 for pollution offences, and if a case goes to the Crown Court there is no limit to the fine. The polluter also has to meet the costs incurred by the Environment Agency in bringing the case to court.

Even when a case is not taken to court, the cost of investigations and repairing the damage still has to be met – and these costs are increasing. For example, restocking of fish can cost many thousands of pounds, and many insurance policies no longer cover pollution clean-up costs.

The "Building a cleaner future" video has been produced by the Environment Agency and CIRIA with the support of the BOC Foundation for the Environment with the aim of reducing pollution from the construction industry. The training package was developed in consultation with, and approved by, a steering group consisting of experts from the construction industry and the Environment Agency. The video highlights the causes of pollution on construction sites and explains how it can be avoided. This booklet provides more detailed advice and background information for those using the video in training. By following this advice, the risk of pollution can be minimised at every construction site.

MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

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For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

0645 333 111

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

ENVIRONMENT AGENCY EMERGENCY HOTLINE

0800 80 70 60

Environment Agency
Information Centre
Head Office



ENVIRONMENT AGENCY



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